



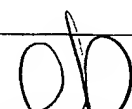
# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,319	02/21/2002	Geun Su Lee	30205/38088	8187
4743	7590	04/08/2004	EXAMINER	
MARSHALL, GERSTEIN & BORUN LLP 6300 SEARS TOWER 233 S. WACKER DRIVE CHICAGO, IL 60606			THORNTON, YVETTE C	
			ART UNIT	PAPER NUMBER
			1752	

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/080,319	LEE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Yvette C. Thornton	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 5-10 and 19-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-8, 10 and 19-24 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>01072004</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

This is written in reference to application number 10/080319 filed on February 21, 2002 and published as US 2003/0022101 A1 on January 30, 2003.

#### *Response to Amendment*

1. Claims 1-4, 11-18 and 25-31 have been cancelled. Claims 5-10 and 19-24 are currently pending.
2. In response to the rejection of claim 8 set forth under 35 USC 112, 2<sup>nd</sup> paragraph rejection, applicants submit US 6150069, US 5962184 and US 653047, all of which cite substituents in the double bond or alkene form. The examiner interprets this to mean that the applicants are not claiming the presence of a double bond in the formed polymer. Therefore, the 112 rejection is hereby withdrawn.
3. Applicants have amended the ratio of a:b:c of claimed formula 2 and 3 of instant claim 5. The examiner finds support for the said amendments in the specification on page 6, lines 15-17 and page 7, line 21-23.

#### *Information Disclosure Statement*

4. The Information Disclosure Statement filed on January 7, 2004 has been entered and fully considered.

#### *Drawings*

5. The drawings were received on January 7, 2004. These drawings are acceptable.

#### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5-8, 10 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani et al. (JP 2001-330955 A, machine translation and spot translation) in view of Lee et al. (US 6,642,336 B1). Otani exemplifies in example 5 a polymer comprising octafluoro-cyclopentene (OFCPE), vinyl acetate, 3,3,3-trifluoro 2-trifluoromethyl propene and t-butyl acrylic acid [48:26:12:14] (see p. 0057 Table 1, based on spot translation from Translation Department of USPTO). It is the examiner's position that t-butyl acrylic acid meets the limitations of claimed monomer "c" of formula 2 wherein R4 is a t-butyl group. Otani further teaches that the exemplified polymer is dissolved in acetic acid n-butyl and admixed with 8 weight% of the acid generator triphenylsulfonium triflate to form a resist solution (see p. 0062-0064).

8. Otani fails to exemplify the acid generators of instant claim 20. Otani does however teach that there is especially no limit about the photoacid generator used in the taught invention. Suitable examples include diazomethanes; nitrobenzyl derivatives such as p-toluenesulfonic acid 2,6-dinitro benzyl; sulfonates; onium salts; and benzoin tosylates (p. 0038-0047). The said acid generator may be used independently or in a combination of two or more. The content is chosen in the range of 0.5-20 weight percent (p. 0048). It would have been obvious to one of ordinary skill in the art, in light of the above disclosure, to use a combination of acid generators in the exemplified compositions such as triphenylsulfonium triflate (see examples) and p-toluenesulfonic acid 2,6-dinitro benzyl (i.e., dinitrobenzyltosylate).

9. Otani also fails to exemplify an organic solvent set forth in instant claim 23. Otani teaches that suitable solvents for the taught components include cyclohexanone, 2-heptanone, ethyl lactate, butyl acetate and propylene monochrome acetate (p. 0049). These solvents may be used independently or in combination of two or more. One of ordinary skill in the art would have been motivated by the teachings of Otani to substitute any of the taught solvents such as cyclohexanone, 2-heptanone, ethyl lactate and propylene monochrome acetate for the exemplified butyl acetate because Otani teaches that they are all equivalents.

10. Otani teaches all the limitations of the claims as discussed above, except it fails to teach the copolymerization of the taught monomers with claimed repeating unit "b" of formula 2 or repeating units "b" and/or "c" of formula 3 as set forth in the instant claims. Lee et al. (US 6,642,336 B1) teaches that norbornene carboxylate having an acid labile group as a substituent is used to enhance contrast (c. 5, l. 13-15). Further a norbornene carboxylate monomer having a lactone group as a substituent improves adhesion and a photoresist pattern using the said monomer has an excellent profile with roughness (c. 5, l. 8-12). It is the examiner's position that the said norbornene derivatives meet the limitations of claimed repeating unit "b" of formula 2. One of ordinary skill in the art would have been motivated by the teaching of Lee, which discloses what is well known and conventional in the art, to incorporate a norbornene carboxylate monomer with acid labile groups ( $=\text{COOR}'$ ), or a norbornene carboxylate monomer with a lactone group ( $=\text{ether group}$ ) to the exemplified polymer of example 5 of Otani in order to enhance contrast or improve adhesion and the profile of the formed photoresist pattern.

*Allowable Subject Matter*

11. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: review of the prior art failed to teach and/or suggest the specific polymers as set forth in instant claim 9.

*Response to Arguments*

13. Applicant's arguments with respect to the instant claims have been considered but are of little moment in view of the new ground(s) of rejection.

*Conclusion*

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP§ 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


15. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 1752

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 571-272-1336. The examiner can normally be reached on Monday-Thursday 8-6:30.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Yvette Clarke Thornton  
Patent Examiner  
Art Unit 1752

yct  
April 3, 2004